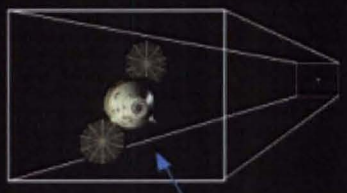
MSFC-2029

National Aeronautics and Space Administration

Radiation-Hardened Electronics for Space Environments (RHESE)

NASA's RHESE Project advances the state-of-the-art in high-performance, radiation-hardened electronics that enable long-term, reliable vehicle operation in the extreme radiation and temperature environment of space and the lunar surface.



RHESE Project tasks include:

Model for Radiation Effects on Electronics: Develop advanced models of the natural radiation environment to diagnose and predict the effects of Single Event Effects (SEEs) on modern electronic architectures.

Reconfigurable Computers: Provide reconfigurable computing capability, resulting in reduction of flight spares and risk reduction for limited circuit lifetimes.

SEE-Immune Reconfigurable Field Programmable Gate Array (FPGA): Develop radiation-hardened FPGAs using Radiation Hardening By Design techniques.

SiGe Integrated Electronics for Extreme Environments: Develop modular mission-critical electronic components to operate reliably in the space environment on spacecraft extremities.

RHESE Project applications include:

- Orion
- Lunar Lander
- Extra Vehicular Activities
- Surface Systems

High Performance Processors: Advance the performance and power efficiency of radiation-hardened processors to meet the demands of autonomous capabilities such as landing and hazard avoidance, rendezvous and docking, and surface system navigation.

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